

# INDEX TO VOLUME XXXVIII

## AUTHORS

	Page		Page
Anderson, R. A., C. Vojnovich, and E. L. Griffin, Jr. Wet-milling high-amylose corn containing 66- to 68-percent-amylose starch	84	proteins of flour	256
—, —, and —. A note on the effect of steeping time on wet-milling high-amylose corn containing 57-percent-amylose starch	94	Collins, N. D. (see R. Katz)	364
Baker, Doris. A colorimetric method for determining fat acidity in grain	47	Conde, R. (see R. Bressani)	76
Barmore, M. A. (see H. R. Elling)	349	Conn, J. F. (see A. R. Handleman)	294
Black, H. C., M. H. Fisher, and G. N. Irvine. Laboratory milling. I. A small-scale bran finisher	97	Craine, E. M., Diane V. Freimuth, Joyce A. Boundy, and R. J. Dimler. Preparation of purified zein by adsorption-desorption	399
Borsos, A. C. (see L. P. Karacsonyi)	14	Croes, A. W. Measurement of flour whiteness	8
Boundy, Joyce A. (see E. M. Craine)	399	Dahle, L. (see Betty Sullivan)	272, 281, 463
Bradley, J. W. (see G. N. Irvine)	153	Deobald, H. J. (see J. T. Hogan)	291
Bressani, R., and R. Conde. Changes in the chemical composition and in the distribution of nitrogen of maize at different stages of development	76	Desikachar, H. S. R., and V. Subrahmanyam. The formation of cracks in rice during wetting and its effect on the cooking characteristics of the cereal	356
Bushuk, W. Accessible sulphhydryl groups in dough	438	— (see A. N. Srirangarajan)	391
—, and I. Hlynka. The bromate reaction in dough. III. Effect of continuous mixing and flour particle size	178	Dimler, R. J. (see E. M. Craine)	399
—, and —. The bromate reaction in dough. IV. Effect of reducing agents	309	— (see J. S. Wall)	407
—, and —. The bromate reaction in dough. V. Effect of flour components and some related compounds	316	Doane, W. M. (see R. L. Whistler)	251
Cardwell, A. B. (see R. Katz)	364	Duvick, D. N. Protein granules of maize endosperm cells	374
Charley, Helen (see J. E. Cluskey)	325	Elling, H. R., and M. A. Barmore. Microtests for flour quality	349
Chung, D. S. (see L.-t. Fan)	540	Enari, T.-M. (see Matti Linko)	60
Cluskey, J. E., N. W. Taylor, Helen Charley, and F. R. Senti. Electrophoretic composition and intrinsic viscosity of glutens from different varieties of wheat	325	Fan, L.-t., D. S. Chung, and J. A. Shellenberger. Diffusion coefficients of water in wheat kernels	540
Coates, J. H., and D. H. Simmonds. Proteins of wheat and flour. Extraction, fractionation, and chromatography of the buffer-soluble		Fisher, M. H. (see H. C. Black)	97
		Fleischman, A. I. (see G. J. Haas)	198
		Fleming, J. R., B. S. Miller, and J. A. Johnson. A method for the determination of relative amounts of malted wheat, fungal ( <i>Aspergillus oryzae</i> ), and bacterial ( <i>Bacillus subtilis</i> ) alpha-amylase in mixtures and its application to malted wheat	479
		—, J. A. Johnson, and B. S. Miller. The control of fungi during the malting of wheat	170
		Fles, Melita (see Elizabeth M. Osman)	449
		Fong, W. S. (see R. R. Irani)	67
		Fosdick, L. S. (see F. E. Kohn)	165
		Freimuth, Diane V. (see E. M. Craine)	399

- Geddes, W. F. (see K. A. Gilles) 229
- Gilles, K. A., W. F. Geddes, and F. Smith. The carbohydrates of the Gramineae. XI. The constitution of the water-soluble polysaccharides derived from bread crumb 229
- Griffin, E. L., Jr. (see R. A. Anderson) 84, 94
- Grosskreutz, J. C. A lipoprotein model of wheat gluten structure 336
- Haas, G. J., and A. I. Fleischman. A note on a rapid method for the determination of lipids in brewing adjunct cereals 198
- Hagberg, S. Note on a simplified rapid method for determining alpha-amylase activity 202
- . Modified Wohlgemuth methods for alpha-amylase activity of wheat and rye 241
- Handleman, A. R., J. F. Conn, and J. W. Lyons. Bubble mechanics in thick foams and their effects on cake quality 294
- Hlynka, I. (see W. Bushuk) 178, 309, 316
- (see R. Tkachuk) 393
- , F. D. Kuzina, and W. C. Shuey. Conversion of constant-flour farinograph absorption to constant-dough basis 386
- Hodge, J. E., and E. C. Nelson. Preparation and properties of galactosylisomaltol and isomaltol 207
- , and Helen A. Moser. Flavor of bread and pastry upon addition of maltol, isomaltol, and galactosylisomaltol 221
- Hogan, J. T. (see A. S. Roseman) 423
- , and A. S. Roseman. Gas plasma irradiation of rice. II. Effect of heat on hydration and cooking characteristics 432
- , and H. J. Deobald. Note on a method of determining the degree of milling of whole milled rice 291
- Indiramma, K. (see A. N. Srirangarajan) 391
- Irani, R. R., and W. S. Fong. Measurements of the particle size distribution of flour 67
- Irvine, G. N., J. W. Bradley, and G. C. Martin. A farinograph technique for macaroni doughs 153
- (see H. C. Black) 97
- Jaska, E. J. Effect of bleaching on flour as measured by structural relaxation of dough 369
- Jennings, A. C. The determination of the nitrogen content of cereal grain by colorimetric methods 467
- Johnson, J. A. (see J. R. Fleming) 170, 479
- Jongh, G. The formation of dough and bread structures. I. The ability of starch to form structures, and the improving effect of glyceryl monostearate 140
- Kalbfleisch, W. (see H. Miller) 204
- Karacsonyi, L. P., and Borsos, A. C. An apparatus for measuring the torsional strength of macaroni 14
- Katz, R., N. D. Collins, and A. B. Cardwell. Hardness and moisture content of wheat kernels 364
- Kemp, J. G., A. G. O. Whiteside, D. C. MacDonald, and H. Miller. Ottawa micro flour mill 50
- Kohn, F. E., L. Wiseblatt, and L. S. Fosdick. Some volatile carbonyl compounds arising during panary fermentation 165
- Krynauw, G. N. (see J. B. Louw) 1
- Kuzina, F. D. (see I. Hlynka) 386
- Larson, E. (see Betty Sullivan) 272
- Leach, H. W., and T. J. Schoch. Structure of the starch granule. II. Action of various amylases on granular starches 34
- Lee, C. C., and R. Tkachuk. A note on self-diffusion in dough containing Br<sup>-</sup>-labeled bromate 194
- Leith, Sandra J. (see Elizabeth M. Osman) 449
- Linko, Matti, P. Linko, and T.-M. Enari. 2(3)-Benzoxazolone in malting of barley 60
- Linko, P. Zone electrophoresis pattern of free amino acids as an index of storage condition of wheat 187
- (see Matti Linko) 60
- Louw, J. B., and G. N. Krynauw. The relationship between farinograph mobility and absorption 1
- Lyons, J. W. (see A. R. Handleman) 294
- MacDonald, D. C. (see J. G. Kemp) 50
- Majumder, S. K. (see K. S. Srinivasan) 529
- Martin, G. C. (see G. N. Irvine) 153
- Miller, B. S. (see J. R. Fleming) 170, 479
- , J. A. Johnson, and R. J. Robinson. Identification of carbonyl compounds produced in

- pre-ferments ..... 507
- Miller, H. A. G. O. Whiteside, and W. Kalbfleisch. A note on the construction of a small-scale dough expansion apparatus for the estimation of wheat quality ..... 204
- (see J. G. Kemp) ..... 50
- Moser, Helen A. (see J. E. Hodge) ..... 221
- Nelson, E. C. (see J. E. Hodge) ..... 207
- Nelson, O. R. (see Betty Sullivan) ..... 281
- Osman, Elizabeth M., Sandra J. Leith, and Melita Fles. Complexes of amylose with surfactants ..... 449
- Peterson, D. A. (see Betty Sullivan) ..... 463
- Pinckney, A. J. The biuret test as applied to the estimation of wheat protein ..... 501
- Pomeranz, Y., and J. A. Shellenberger. Histochemical characterization of wheat and wheat products. I. Histochemical demonstration of germ and aleurone using Acridine Orange ..... 103
- , and —. Histochemical characterization of wheat and wheat products. II. Mapping of protein distribution in the wheat kernel ..... 109
- , and —. Histochemical characterization of wheat and wheat products. III. Use of methyl green in estimating flour extraction rate ..... 113
- , and —. Histochemical characterization of wheat and wheat products. IV. Mapping the free fatty acids in germinating wheat ..... 122
- , and —. Histochemical characterization of wheat and wheat products. V. Sulfhydryl groups: their localization in the wheat kernel ..... 133
- Ponte, J. C., Jr., and Jocelyn Rosen. Communication to the Editor. Obtaining damaged starch mathematically rather than graphically by the Sandstedt and Matern procedure ..... 306
- Robinson, R. J. (see B. S. Miller) ..... 507
- Roseman, A. S., J. T. Hogan, R. B. Stone, and J. C. Webb. Gas plasma irradiation of rice. I. Hydration characteristics ..... 423
- (see J. T. Hogan) ..... 432
- Rosen, Jocelyn (see J. C. Ponte, Jr.) ..... 306
- Sabry, Z. I., and R. I. Tannous. Effect of parboiling on the thiamine, riboflavin, and niacin contents of wheat ..... 536
- Sanders, E. H. (see S. A. Watson) ..... 22
- Sankaran, A. N. (see A. N. Srirangarajan) ..... 391
- Schoch, T. J. (see H. W. Leach) ..... 34
- Senti, F. R. (see J. E. Cluskey) ..... 325
- Shellenberger, J. A. (see L.-t. Fan) ..... 540
- (see Y. Pomeranz) ..... 103, 109, 113, 122, 133
- Shuey, W. C. (see I. Hlynka) ..... 386
- Simmonds, D. H. (see J. H. Coates) ..... 256
- Smith, F. (see K. A. Gilles) ..... 229
- Sollars, W. F. Chloride content of cake flours and flour fractions ..... 487
- Srinivasan, K. S., and S. K. Majumder. Effect of some volatile chemicals on the microbial spoilage of moist kafir corn (*Andropogon sorghum*) under airtight storage ..... 529
- Srirangarajan, A. N., H. S. R. Desikachar, K. Indiramma, and A. N. Sankaran. Note on variations in residual bran in individual rice grains from batches polished to different degrees ..... 391
- Stone, R. B. (see A. S. Roseman) ..... 423
- Subrahmanyam, V. (see H. S. R. Desikachar) ..... 356
- Sullivan, Betty, L. Dahle, and E. Larson. The oxidation of wheat flour. I. Measurement of sulfhydryl groups ..... 272
- , —, and O. R. Nelson. The oxidation of wheat flour. II. Effect of sulfhydryl-blocking agents ..... 281
- , —, and D. A. Peterson. The oxidation of wheat flour. III. The isolation of thioctic acid ..... 463
- Swango, L. C. (see J. S. Wall) ..... 407
- Tannous, R. I. (see Z. I. Sabry) ..... 536
- Tarleton, R. J., William Findlay Geddes ..... (1) iii
- Taylor, N. W. (see J. E. Cluskey) ..... 325
- Tessari, D. (see J. S. Wall) ..... 407
- Tkachuk, R., and I. Hlynka. Some improving effects of halogenates and their reduction intermediates in dough ..... 393
- (see C. C. Lee) ..... 194
- Tschoegl, N. W. Chloroethanol as a cereal protein dispersant ..... 516
- Vojnovich, C. (see R. A. Anderson) ..... 84, 94
- Wall, J. S., L. C. Swango, D. Tessari, and R. J. Dimler. Organic

- acids of barley grain ..... 407  
 Watson, S. A., and E. H. Sanders.  
 Steeping studies with corn endo-  
 sperm sections ..... 22  
 Webb, J. C. (see A. S. Roseman) ..... 423  
 Whistler, R. L., and W. M. Doane.  
 Characterization of intermediary  
 fractions of high-amylose corn  
 starches ..... 251  
 Whiteside, A. G. O. (see J. G.  
 Kemp) ..... 50  
 (see H. Miller) ..... 204  
 Wiseblatt, L. (see F. E. Kohn) ..... 165



## SUBJECTS

- |  | Page |   | Page |
|--|------|---|------|
| Absorption (see also Water ab-<br>sorption)  |      | astase, pancreatin; effect on<br>granular starches (Leach and<br>Schoch) .....  | 34   |
| Effect on farinograms of semo-<br>lina (Irvine, Bradley, and<br>Martin) .....  | 153  | Amylase, alpha- (see also Amylase<br>activity)  |      |
| vs. Farinograph mobility (Louw<br>and Krynauw) .....   | 1    | Bacterial ( <i>B. subtilis</i> ), fungal<br>( <i>Aspergillus oryzae</i> ), and<br>malted-wheat; method of de-<br>termining relative amounts<br>(Fleming, Miller, and Johnson) ..... | 479  |
| Absorption, farinograph; by con-<br>stant-flour method, converted<br>to constant-dough basis<br>(Hlynka, Kuzina, and Shuey). ..... | 386  | Amylase, alpha- and beta-<br>Effect on malt quality and yield<br>in barley (Linko, Linko, and<br>Enari) .....   | 60   |
| Acid(s)  |      | Amylase activity, alpha-<br>Bacterial, fungal, and malted<br>wheat-, see under Amylase,<br>alpha-   |      |
| Amino, see Amino acids   |      | Effect on granular starches<br>(Leach and Schoch) .....   | 34   |
| Fatty, see Fatty acids   |      | In flour, method for determining<br>(Hagberg) .....   | 202  |
| Organic, of barley grain, iden-<br>tity and amounts (Wall,<br>Swango, Tessari, and Dimler) .....                                   | 407  | Method for determining, modi-<br>fied Wohlgemuth (Hagberg) ..   | 241  |
| Thioctic, in wheat flour; isola-<br>tion of (Sullivan, Dahle, and<br>Peterson) .....   | 463  | Amylose, see Starch, Amylose  |      |
| Acidity, fat, see Fat acidity  |      | Amylose, Corn, see Corn starch  |      |
| Acridine orange dye, for histo-<br>chemical study of wheat germ<br>and aleurone (Pomeranz and<br>Shellenberger) .....              | 103  | Apparatus   |      |
| Adsorption-desorption procedure,<br>for zein preparation (Craine,<br>Freimuth, Boundy, and Dim-<br>ler) .....                      | 399  | Bran finisher, small-scale (Black,<br>Fisher, and Irvine) .....   | 97   |
| Air-classification of flour, see<br>Flour, Particle size of  |      | Dough-expansion-, small-scale,<br>for estimation of wheat qual-<br>ity (Miller, Whiteside, and<br>Kalbfleisch) .....  | 204  |
| Amino acids (see also individual<br>amino acids)   |      | Freezing microtome, for histo-<br>chemical study to map protein<br>distribution in wheat kernel<br>(Pomeranz and Shellenberger) ..  | 109  |
| In buffer-soluble proteins of<br>wheat and flour (Coates and<br>Simmonds) .....  | 256  | For gas-plasma irradiation of<br>rice (Roseman, Hogan, Stone,<br>and Webb) .....  | 423  |
| In corn kernel during develop-<br>ment (Bressani and Conde) ..   | 76   | Hunter Color Grader and Kent<br>Jones & Martin Flour Color<br>Grader (Croes) .....  | 8    |
| Free, of wheat; electrophoresis<br>pattern as index of storage<br>condition (Linko) .....  | 187  | For organic acid elution from   |      |
| Amylase(s)   |      |   |      |
| Bacterial alpha-, beta-, fungal<br>alpha-, glucamylase, malt di-   |      |   |      |

- barley (Wall, Swango, Tessari, and Dimler) ..... 407
- Omnimixer, for lipid extraction (Haas and Fleischman) ..... 198
- Ottawa micro flour mill (Kemp, Whiteside, MacDonald, and Miller) ..... 50
- Paley bottle, for flour quality microtests (Grosskreutz) ..... 349
- Torsionmeter, for macaroni strength (Karacsonyi and Borsos) ..... 14
- Aroma, see Flavor of bread**
- Bacteria**
- In corn (kafir), stored; treatment with volatile chemicals (Srinivasan and Majumder) ..... 529
- In dough; effects on formation of carbonyl compounds (Kohn, Wiseblatt, and Fosdick) ..... 165
- Baked products; flavor of, with maltol and related compounds (Hodge and Moser) ..... 221**
- Baking tests**
- Cake; effect of (batter) bubble mechanics on quality of (Handleman, Conn, and Lyons) ..... 294
- For effect of -SH-blocking agents (NEMI, PCMB) (Sullivan, Dahle, and Nelson) ..... 281
- For improving effects of halogenates in dough (Tkachuk and Hlynka) ..... 393
- Pie crust and yeast rolls (Hodge and Moser) ..... 221
- Barley**
- With colored grains; nitrogen content, determined by colorimetry (Jennings) ..... 467
- Malt yield of, increased by BOA (Linko, Linko, and Enari) ..... 60
- Nitrogen in, determination by colorimetry (Jennings) ..... 467
- Organic acids of; whole grain and fractions (Wall, Swango, Tessari, and Dimler) ..... 407
- Batters; bubble mechanics in; effect on cake quality (Handleman, Conn, and Lyons) ..... 294**
- Bending strength (macaroni), see Torsional strength**
- 2(3)-Benzoxazolone (BOA); in malting of barley, to increase malt yield (Linko, Linko, and Enari) ..... 60**
- Biuret method (modified)**
- For determining nitrogen content of barley and wheat (Jennings) ..... 467
- For estimation of wheat protein (Pinckney) ..... 501
- Bleaching of flour (see also Bleaching agents)**
- Cake, and fractions; chloride content (Sollars) ..... 487
- For color measurement (Croes) ..... 8
- Effect as measured by structural relaxation of dough (Jaska) ..... 369
- Bleaching agents (see also Bleaching of flour)**
- Benzoyl peroxide and chlorine dioxide; effect on flour as measured by structural relaxation of dough (Jaska) ..... 369
- BOA, see 2(3)-Benzoxazolone**
- Bran**
- Amount in flour, determined by adsorption of methyl green (Pomeranz and Shellenberger) ..... 113
- Finisher, small-scale (Black, Fisher, and Irvine) ..... 97
- From rice, residual; variation with degree of polishing (Srirangarajan, Desikachar, Indiramma, and Sankaran) ..... 391
- Bread (see also following Bread entries)**
- Carbonyl compounds in, formed during fermentation (Kohn, Wiseblatt, and Fosdick) ..... 165
- Flavor of, see **Flavor of bread**
- From starch; structure-forming ability of starch and effect of emulsifier (Jongh) ..... 140
- Bread crumb (see also Crumb)**
- Polysaccharides (water-soluble) from; constitution (Gilles, Geddes, and Smith) ..... 229
- Bread improvers (see also Bromate; Bromate and iodate; Flour improvers)**
- Glyceryl monostearate (Jongh) ..... 140
- Bread staling; rate of, study with "soluble starch" (Gilles, Geddes, and Smith) ..... 229**
- Breadmaking; Pre-ferments, see under Fermentation**
- Brewing adjunct cereals; lipids in, rapid method for determining (Haas and Fleischman) ..... 198**
- Bromate, potassium**
- Br<sup>35</sup>-labeled, in dough; note on self-diffusion in (Lee and Tkachuk) ..... 194
- Reaction of in dough
- effect of continuous mixing and flour particle size (Bushuk and Hlynka) ..... 178
- effect of granular starch, gluten, pentosans, lipids; and of cumene hydroperoxide,



- n-propyl gallate, and butylated hydroxyanisole (Bushuk and Hlynka) ..... 316
- effect of reducing agents (Bushuk and Hlynka) ..... 309
- Bromate and iodate**
- Improving effects in dough, compared with halogenates and their reduction intermediates (Bushuk and Hlynka) ..... 393
- Response of, in doughs with increasing PCMB (Sullivan, Dahle, and Nelson) ..... 281
- Browning reaction**, forming isomaltol and maltol in bread (Hodge and Nelson) ..... 207
- Bubble mechanics**, in cake batters; effect on quality (Handleman, Conn, and Lyons) ..... 294
- Bulgur**, vitamins in (B-complex); effect of parboiling on (Sabry and Tannous) ..... 536
- Butylated hydroxyanisole**; effect on bromate reaction in dough (Bushuk and Hlynka) ..... 316
- Cake**, Quality of; effect of bubble mechanics on (Handleman, Conn, and Lyons) ..... 294
- Cake flour and fractions**; chloride content of (Sollars) ..... 487
- Carbohydrates**, see specific carbohydrate
- Carbonyl compounds**
- In bread; volatile, formed during fermentation (Kohn, Wiseblatt, and Fosdick) ..... 165
- In pastes; identification (Miller, Johnson, and Robinson) ..... 507
- Cell structure**, in corn endosperm (Duvick) ..... 374
- Cereals and cereal products**
- Brewing adjuncts, lipids in; rapid method for determining (Haas and Fleischman) ..... 198
- Histochemical characterization (wheat) (Pomeranz and Shellenberger) 103, 109, 113, 122, 133
- Chloride**, in cake flours and fractions (Sollars) ..... 487
- para-Chloromercuribenzoate (PCMB)**
- Effect on dough mixing characteristics (Sullivan, Dahle, and Nelson) ..... 281
- Measurement of -SH groups in flour, in presence of (Sullivan, Dahle, and Larson) ..... 272
- Chloroethanol**, as cereal protein dispersant (Tschoegl) ..... 516
- Chloropicrin**; effect on microbial spoilage of moist kafir corn (Srinivasan and Majumder) ..... 529
- Chromatography**, see Techniques
- Coenzymes**; thioctic acid, isolation of from wheat flour (Sullivan, Dahle, and Peterson) ..... 463
- Color**
- Of flour; measurement of whiteness (Croes) ..... 8
- Of grains (Jennings) ..... 467
- Of wheat tissues; in histochemical test of -SH groups in wheat products (Pomeranz and Shellenberger) ..... 133
- Color grade of flour**, vs. extent of dye adsorption (wheat kernel) and ash content (Pomeranz and Shellenberger) ..... 113
- Colorimetry**, see Techniques
- Continuous mixing**, see Dough(s), Mixing of
- Conversion factors** for farinograph data, constant-flour to constant-dough basis (Hlynka, Kuzina, and Shuey) ..... 386
- Cooking quality**
- Of macaroni (Karacsonyi and Borsos) ..... 14
- Of rice
- effect on, of cracks formed during wetting (Desikachar and Subrahmanyam) ..... 356
- gas-plasma-irradiated; effect of heat on (Hogan and Roseman) ..... 432
- Corn** (see also succeeding Corn entries)
- Changes in chemical composition and distribution of nitrogen during kernel development (Bressani and Conde) ..... 76
- Endosperm cells of, protein granules in (Duvick) ..... 374
- Fat acidity in, determined by colorimetric method (Baker) ..... 47
- High-amylose
- effect of steeping time on wet-milling (Anderson, Vojnovich, and Griffin) ..... 94
- wet-milled for genetic study (Anderson, Vojnovich, and Griffin) ..... 84
- Kafir; microbial spoilage in; effect on, of chloropicrin, ethylene dibromide, ethylene oxide, and methyl bromide (Srinivasan and Majumder) ..... 529
- Zein (purified) prepared from;

- adsorption-desorption procedure (Craine, Freimuth, Boundy, and Dimler) . . . . . 399
- Corn endosperm**; steeping studies (Watson and Sanders) . . . . . 22
- Corn starch**  
Effect of various enzymes on (Leach and Schoch) . . . . . 34  
High-amylose  
effect of steeping time on wet-milling (Anderson, Vojnovich, and Griffin) . . . . . 94  
intermediary fractions (Whistler and Doane) . . . . . 251  
wet-milled (pilot-plant scale) for genetic study (Anderson, Vojnovich, and Griffin) . . . . . 84
- L(+)-Cysteine hydrochloride**; effect of, on bromate reaction in dough (Bushuk and Hlynka) . . . . . 309
- Corn wet-milling**  
Of high-amylose corn  
experimental, for genetic study (Anderson, Vojnovich, and Griffin) . . . . . 84  
for effect of steeping time (Anderson, Vojnovich, and Griffin) . . . . . 94  
Steeping studies with corn endosperm sections (Watson and Sanders) . . . . . 22
- Crumb** (see also **Bread crumb**)  
Of starch bread; structure formation and improving effect of glyceryl monostearate (Jongh) . . . . . 140
- Cumene hydroperoxide**; effect on bromate reaction in dough (Bushuk and Hlynka) . . . . . 116
- Damaged starch**, see **Starch**, damaged
- Diffusion coefficients** of water in wheat kernels (Fan, Chung, and Shellneberger) . . . . . 540
- Dispersion of protein** (cereal) by chloroethanol (Tschoegl) . . . . . 516
- Dough(s)** (see also **Extensigraph** and **Farinograph** studies)  
With bromate, Br<sup>35</sup>-labeled; note on self-diffusion (Lee and Tkachuk) . . . . . 194  
Bromate reaction in  
effect of continuous mixing and flour particle size (Bushuk and Hlynka) . . . . . 178  
effect on, of: granular starch, gluten, pentosans, lipids; and of cumene hydroperoxide, n-propyl gallate, butylated hydroxyanisole (Bushuk and Hlynka) . . . . . 316  
effect of reducing agents (Bushuk and Hlynka) . . . . . 309
- Farinograph absorption**; constant-flour data converted to constant-dough (Hlynka, Kuzina, and Shuey) . . . . . 386
- Improving effects** in  
of bromine, chlorine, chlorite, hypobromite, and hypochlorite; compared with effects of bromate and iodate (Bushuk and Hlynka) . . . . . 393  
of glyceryl monostearate (Jongh) . . . . . 140
- Macaroni**; farinograph technique for (Irvine, Bradley, and Martin) . . . . . 153
- Mixing of, continuous**; effect on bromate reaction in (Bushuk and Hlynka) . . . . . 178
- Mobility of, vs. absorption**; farinograph study (Louw and Krynauw) . . . . . 1
- From starch**; structure formation and emulsifier effect (Jongh) . . . . . 140
- Structural relaxation of, indicating effect of bleaching on flour** (Jaska) . . . . . 369
- Sulphydryl groups in; accessibility** (Bushuk) . . . . . 438
- Dough expansion apparatus**; for estimating wheat quality (Miller, Whiteside, and Kalbfleisch) . . . . . 204
- Durum products**, see individual products
- Dye-staining**, see **Techniques**
- Electrolytic resistivity changes**, for measuring flour particle size distribution (Irani and Fong) . . . . . 67
- Electron-micrograph study of gluten structure** (Grosskreutz) . . . . . 336
- Electrophoresis**, see **Techniques**
- Emulsifiers**  
Complexes with amylose (Osman, Leith, and Fles) . . . . . 449  
Glyceryl monostearate; effect on ability of starch to form structures (Jongh) . . . . . 140
- Enzymes**, see specific enzymes
- Enzyme activity**; effect on swelling power and solubility of corn starch (Leach and Schoch) . . . . . 34
- Ethylene dibromide and ethylene oxide**; effect on microbial spoilage of moist kafir corn (Srinivasan and Majumder) . . . . . 529
- Extensigraph studies**  
For effect of -SH-blocking

- agents on oxidation of wheat flour (Sullivan, Dahle, and Nelson) ..... 281
- For improving effect of halogenates in dough (Tkachuk and Hlynka) ..... 393
- Extraction of proteins** (wheat and flour), buffer-soluble (Coates and Simmonds) ..... 256
- Farinograph studies**
- For characteristics of macaroni doughs (Irvine, Bradley, and Martin) ..... 153
- Constant-flour absorption converted to constant-dough basis (Hlynka, Kuzina, and Shuey) ..... 386
- Dough mobility vs. absorption (Louw and Krynauw) ..... 1
- For effect of bleaching on flour, as measured by structural relaxation of dough (Jaska) ..... 369
- For effect of -SH-blocking agents on oxidation of wheat flour (Sullivan, Dahle, and Nelson) ..... 281
- Starch-water mixture; for effect of glyceryl monostearate (Jongh) ..... 140
- Fat acidity** in grain, rapid colorimetric method for determining (Baker) ..... 47
- Fatty acids**
- Complexes with amylose (Osman, Leith, and Fies) ..... 449
- Free, in germinating wheat; changes in, mapped by dye-adsorption technique (Pomeranz and Shellenberger) ..... 122
- Fermentation**
- Panary; carbonyl compounds arising during (Kohn, Wiseblatt, and Fosdick) ..... 165
- Pre-ferments; carbonyl compounds in identification (Miller, Johnson, and Robinson) .. 507
- Flavor of bread**
- From carbonyl compounds arising during panary fermentation (Kohn, Wiseblatt, and Fosdick) ..... 165
- From carbonyl compounds produced in pre-ferments (Miller, Johnson, and Robinson) ..... 507
- From isomaltol and maltol (Hodge and Nelson) ..... 207
- With maltol and related compounds (Hodge and Moser) ..... 221
- Flour(s)** (wheat, unless otherwise specified) (see also succeeding entries)
- Absorption-mobility study (Louw and Krynauw) ..... 1
- Alpha-amylase activity in (wheat and rye), method for determining (Hagberg) ... 202, 241
- Cake, see **Cake entries**
- Color, see **Color**, of flour
- Effect of bleaching, as measured by structural relaxation of dough (Jaska) ..... 369
- Extraction rate of; estimated by dye-adsorption technique (Methyl green) (Pomeranz and Shellenberger) ..... 113
- Oxidation of
- effect of -SH-blocking agents on (Sullivan, Dahle, and Nelson) ..... 281
- isolation of thioctic acid (Sullivan, Dahle, and Peterson) 463
- measurement of -SH groups (Sullivan, Dahle, and Larson) ..... 272
- Particle size of
- distribution, measurements of (Irani and Fong) ..... 67
- effect of, on bromate reaction in dough (Bushuk and Hlynka) ..... 178
- Protein in, estimated by biuret test, modified (Pinckney) .. 501
- Proteins of, buffer-soluble; extraction, fractionation, and chromatography (Coates and Simmonds) ..... 256
- Quality of, microtests for (Elling and Barmore) ..... 349
- Ottawa mill (Kemp, Whiteside, MacDonald, and Miller) ..... 50
- Reclaimed from bran in small-scale finisher (Black, Fisher, and Irvine) ..... 97
- Rye, wheat; alpha-amylase activity in; modified Wohlge-muth method for determining (Hagberg) ..... 241
- Whiteness of, see **Color**, Of flour
- Yields from Ottawa micro mill (Kemp, Whiteside, MacDonald, and Miller) ..... 50
- Flour fractions**; cake, chloride content of (Sollars) ..... 487
- Flour improvers**
- Bromate and iodate
- effect in dough, compared with sodium chlorite and other halogenates (Tkachuk and Hlynka) ..... 393
- response in doughs with increasing PCMB (Sullivan,



- Dahle, and Nelson) ..... 281
- Fluorescence**; with acridine orange, for histochemical study of wheat and its milled products (Pomeranz and Shellenberger) 103
- Foams**, thick; see **Batters**
- Formaldehyde**, inhibiting mold growth during malting of wheat (Fleming, Johnson, and Miller) ..... 170
- Fractionation** (see also **Flour fractions**)
- Of corn starch, high-amylose; for study of intermediary fractions (Whistler and Doane) ... 251
- Of proteins (wheat and flour), buffer-soluble (Coates and Simmonds) ..... 256
- Freezing microtome**, see **Techniques**
- Fumigation**; effect of chloropicrin, ethylene dibromide, ethylene oxide, and methyl bromide on microbial spoilage of moist kafir corn (Srinivasan and Majumder) ..... 529
- Fungi** (see also **Molds**); inhibition of, during malting of wheat (Fleming, Johnson, and Miller) 170
- Fungicides**, for control during malting of wheat (Fleming, Johnson, and Miller) ..... 170
- Galactosylisomaltol**
- Effect on bread flavor (Hodge and Moser) ..... 221
- Preparation and properties (Hodge and Nelson) ..... 207
- Gas retention**; measured in Paley bottle; microtest for flour quality (Grosskreutz) ..... 349
- Geddes, William Findlay** (Tarleton) (1):iii
- Gelatin**, thiolated; effect of, on bromate reaction in dough (Bushuk and Hlynka) ..... 309
- Germination** of barley grain
- In experimental malting with BOA and gibberellin (Linko, Linko, and Enari) ..... 60
- Possible role of organic acids in (Wall, Swango, Tessari, and Dimler) ..... 407
- Gibberellin**; effect on malt quality and malt yield in barley (Linko, Linko, and Enari) ... 60
- Glutathione**; effect of, on bromate reaction in dough (Bushuk and Hlynka) ..... 309
- Glutelins**
- In protein granules, intracellular deposition (Duvick) ..... 374
- Gluten** (wheat, unless otherwise specified)
- (see also **Flour fractions**)
- Dispersed by chloroethanol (Tschoegl) ..... 516
- Effect on bromate reaction in dough (Bushuk and Hlynka) ... 316
- Electrophoretic composition and intrinsic viscosity (Cluskey, Taylor, Charley, and Senti) ... 325
- Structure of, lipoprotein model (Grosskreutz) ..... 336
- Glycerol monostearate**
- Improving effect of, on dough and bread structures (Jongh) 140
- Grain** (see also specific grains)
- Fat acidity in, rapid colorimetric method for determining (Baker) ..... 47
- Gramineae**, carbohydrates of; XI (Gilles, Geddes, and Smith) ... 339
- Halogenates**; improving effects of, in dough (Tkachuk and Hlynka) ..... 393
- Hardness** of wheat kernel, vs. moisture content (Katz, Collins, and Cardwell) ..... 364
- Heat**; effect of, on rice (gas-plasma-irradiated) (Hogan and Roseman) ..... 432
- Heat-treatment**; effect of parboiling on B-complex vitamins in wheat (Sabry and Tannous) ... 536
- Heidenhain's hematoxylin**
- For protein granule study (Duvick) ..... 374
- Histochemical studies**
- Characterization of wheat and wheat products (Pomeranz and Shellenberger) ..... 103, 109, 113, 122, 133
- Protein granules of corn endosperm cells (Duvick) ..... 374
- Hydration in rice**
- Characteristics after gas-plasma irradiation (Roseman, Hogan, Stone, and Webb) ..... 423
- Cracks formed during; effect on cooking quality (Desikachar and Subrahmanyam) ..... 356
- Effect on, of heat (gas-plasma irradiation) (Hogan and Roseman) ..... 432
- 8-Hydroxyquinoline sulfate**; inhibiting mold growth during malting of wheat (Fleming, Johnson, and Miller) ..... 170
- Iodate ions**, reaction with protein -SH groups; method to deter-

- mine accessibility (Bushuk) . . . 438
- Iodine affinity** of amylose-surfactant complexes (Osman, Leith, and Fles) . . . 449
- Iodine-potassium iodide**  
For yellow stain in protein granule study (Duvick) . . . 374
- Irradiation** (see also **Radioactivity**)  
Gas-plasma, of rice  
for effect of heat on hydration and cooking quality (Hogan and Roseman) . . . 432  
effect on water-holding capacity (Roseman, Hogan, Stone, and Webb) . . . 423
- Isomaltol**  
Effect on bread flavor (Hodge and Moser) . . . 221  
Preparation and properties (Hodge and Nelson) . . . 207
- Isotopes**, see **Radioactivity**
- Kafir corn**, see **Corn**, **Kafir**
- Kinetics** of bromate reaction in dough (Bushuk and Hlynka) . . 178
- Leavening**, in cake batter; bubble mechanics study (Handleman, Conn, and Lyons) . . . 294
- Light-scattering**, see **X-ray scattering**
- Lipids**  
In brewing adjunct cereals, rapid method for determining (Haas and Fleischman) . . . 198  
Effect on bromate reaction in dough (Bushuk and Hlynka) . . 316  
Lipoprotein model of wheat gluten structure (Grosskreutz) . . 336
- Macaroni**; torsional strength of, with Torsionmeter (Karacsonyi and Borsos) . . . 14
- Macaroni doughs**; farinograph technique for (Irvine, Bradley, and Martin) . . . 153
- Maillard reaction**, see **Browning reaction**
- Maize**, see **Corn**
- Malting of wheat**; control of fungi during (Fleming, Johnson, and Miller) . . . 170
- Malting procedure**, with barley (experimental); yield increased by 2(3)-benzoxazolone (BOA) (Linko, Linko, and Enari) . . . 60
- Maltol**; effect on bread flavor (Hodge and Moser) . . . 221
- Method(s)**  
For accessible -SH groups in dough (Bushuk) . . . 438
- Biuret** (modified)  
for determining nitrogen content of barley and wheat (Jennings) . . . 467  
for estimation of protein in wheat and flour (Pinckney) . 501
- Chromatographic**, see **Techniques**, **Chromatography**
- Colorimetric** (see also **Biuret**)  
for fat acidity in grain (Baker) 47
- Colorimetric and modified Wohlgemuth**, for alpha-amylase in wheat or rye (Hagberg) . 241
- For determining lipids** in brewing adjunct cereals (Haas and Fleischman) . . 198
- "Falling number," for determining alpha-amylase activity in flour (Hagberg) . . . 202
- For farinograph data**; to convert constant-flour to constant-dough basis (Hlynka, Kuzina, and Shuey) . . . 386
- Modified Wohlgemuth**, for determining relative amounts of alpha-amylase in mixtures; application to malted wheat (Fleming, Miller, and Johnson) . . . 479
- With rice**, for determining degree of milling (Hogan and Deobald) . . . 291
- For measuring particle size distribution** of flour; gravitational sedimentation, centrifugal sedimentation, microscopic counting, sieving; electrolytic resistivity changes (Irani and Fong) . 67
- For simple calculation** of damaged starch (Ponte and Rosen) . . . 306
- For zein preparation**; adsorption-desorption (Craine, Freimuth, Boundy, and Dimler) . . . 399
- Methyl green dye technique**, for estimating flour extraction rate (Pomeranz and Shellenberger) . . . 113
- Methyl bromide**; effect on microbial spoilage of moist kafir corn (Srinavasan and Majumder) . . . 529
- Micromilling**, see **Milling**, **experimental**
- Milling, experimental**  
Bran finisher, small-scale (Black, Fisher, and Irvine) . . . 97  
For flour quality (Elling and

- Barmore) ..... 349  
 Ottawa micro flour mill (Kemp, Whiteside, MacDonald, and Miller) ..... 50  
**Milling of rice**; method of determining degree of (Hogan and Deobald) ..... 291  
**Millon-Serra reagent**, for protein granule study (Duvick) ..... 374  
**Mixes, cake**; for study of bubble mechanics (Handleman, Conn, Lyons) ..... 294  
**Mixing of dough**, see **Dough(s)**, **Mixing of**; **Extensigraph studies**  
**Moisture in wheat kernel**  
   Diffusion coefficients of (Fan, Chung, and Shellenberger) ..... 540  
   vs. Hardness (Katz, Collins, and Cardwell) ..... 364  
**Molds**  
   In corn, kafir, stored; treatment with volatile chemicals (Srinivasan and Majumder) ..... 529  
   In malted wheat, vs. presence of fungal  $\alpha$ -amylase (Fleming, Miller, and Johnson) ..... 479  
**NEMI**, see **N-ethylmaleimide**  
**N-ethylmaleimide (NEMI)**; effect on dough mixing characteristics (Sullivan, Dahle, and Nelson) ..... 281  
**Niacin**, in wheat; effect of parboiling on (Sabry and Tannous) ..... 536  
**Nitrogen**  
   In barley and wheat; determination by colorimetry (Jennings) ..... 467  
   In corn; changes in chemical composition and distribution during kernel development (Bressani and Conde) ..... 76  
**Oxidation of wheat flour**  
   Effect of sulfhydryl-blocking agents (Sullivan, Dahle and Nelson) ..... 281  
   Isolation of thioctic acid (Sullivan, Dahle, and Peterson) ..... 463  
   Sulfhydryl groups measured (Sullivan, Dahle, and Larson) ..... 272  
**Oxidizing agents**, see **Flour improvers**; **Oxidation of wheat flour**  
**Parboiling**; effect on B-complex vitamins in wheat (Sabry and Tannous) ..... 536  
**Particle size**, see under **Flour**  
**Pastry**, flavor of, with maltol and related compounds (Hodge and Moser) ..... 221  
**PCMB**, see **para-Chloromercuriben-zoate**  
**Pekar test** for flour color (Croes) ..... 8  
**Pentosans**  
   Effect on bromate reaction in dough (Bushuk and Hlynka) ..... 316  
   Water-soluble, in "soluble starch" of bread (Gilles, Geddes, and Smith) ..... 229  
**Pie crust**, see **Pastry**  
**Pigment**, in bran; intensity in grains polished to different degrees (Srirangarajan, Desikachar, Indiramma, and Sankaran) ..... 391  
**Polysaccharides**, water-soluble, from bread crumb; constitution (Gilles, Geddes, and Smith) ..... 229  
**Pre-ferment process**, see **Fermentation**  
**n-Propyl gallate**; effect on bromate reaction in dough (Bushuk and Hlynka) ..... 316  
**Protein(s)** (see also **Protein granules**)  
   In barley, wheat; determination by colorimetry (Jennings) ..... 467  
   Cereal, dispersed by chloroethanol (Tschoegl) ..... 516  
   Composition in hard vs. soft wheat (Cluskey, Taylor, Charley, and Senti) ..... 325  
**Of flour**  
   accessible -SH groups of in dough (Bushuk) ..... 438  
   buffer-soluble; fractions identified (Coates and Simmonds) ..... 256  
   In gluten, structure of; lipoprotein model (Grosskreutz) ..... 336  
   In wheat, estimated by biuret test (modified) (Pinckney) ..... 501  
   In wheat kernel; distribution mapped, by dye-adsorption technique (Pomeranz and Shellenberger) ..... 109  
   Zein (purified) prepared from, by adsorption-desorption procedure (Craine, Freimuth, Boundy, and Dimler) ..... 399  
**Protein granules** of corn endosperm cells (Duvick) ..... 374  
**Quality of flour**, see under **Flour**  
**Quality of wheat**, see under **Wheat**  
**Radioactivity of Br<sup>80</sup>** from self-diffusion in dough (Lee and Tkachuk) ..... 194  
**Reducing agents**; effect of, on bro-

- mate reaction in dough (Bushuk and Hlynka) ..... 309
- Rheology of dough, see Farinograph studies**
- Riboflavin**, in wheat; effect of parboiling on (Sabry and Tannous) ..... 536
- Rice**
- Bran of, residual; amounts varying with degree of polishing of grains (Srirangarajan, Desikachar, Indiramma, and Sankaran) ..... 391
- Cracks in, formed during wetting (Desikachar and Subrahmanyam) ..... 356
- Irradiated, gas-plasma; effect of heat on hydration and cooking quality (Hogan and Roseman) ..... 432
- Method of determining degree of milling (Hogan and Deobald) ..... 291
- Milled; effect of irradiation on water-holding capacity (Roseman, Hogan, Stone, and Webb) ..... 423
- Polishing of, to different degrees; variations in residual bran (Srirangarajan, Desikachar, Indiramma, and Sankaran) ..... 391
- Rye**; alpha-amylase activity in (flour and grain); modified Wohlgemuth method for determining (Hagberg) ..... 241
- Sedimentation techniques**, centrifugal and gravitational; for measuring flour particle size distribution (Irani and Fong) ..... 67
- Semolina**; farinograph characteristics (durum from different years) (Irvine, Bradley, and Martin) ..... 153
- Sieving**; for measuring flour particle size distribution (Irani and Fong) ..... 67
- Sodium bisulfite and sodium borohydride**; effect of, on bromate reaction in dough (Bushuk and Hlynka) ..... 309
- "Soluble starch," see under Carbohydrates, Polysaccharides
- Spectrophotometry, see Techniques**
- Starch(es)** (see also Starch granules)
- Amylose
- complexes with surfactants (Osman, Leith, and Fies) ..... 449
- Arrowroot, corn, potato, rice, sago, sorghum, tapioca, waxy maize, waxy sorghum, wheat; resistance to amylase (Leach and Schoch) ..... 14
- Corn, see **Corn starch**
- Damaged; simple calculation for (Ponte and Rosen) ..... 306
- Granular; effect on bromate reaction in dough ..... 316
- Structure-forming ability of, and effect of emulsifier (Jongh) ..... 140
- Starch granules**
- From corn endosperm, steeping study (Watson and Sanders) ..... 22
- Structure of; dissolving action of various amylases (Leach and Schoch) ..... 34
- Steeping studies**
- Corn endosperm; release of starch granules ..... 22
- High-amylose corn; effect of time on wet-milling (Anderson, Vojnovich, and Griffin) ..... 94
- Storage studies**
- With corn, kafir; effect of chloropicrin, ethylene dibromide, ethylene oxide, and methyl bromide on microbial spoilage in (Srinivasan and Majumder) ..... 529
- With wheat; zone electrophoresis patterns as index of condition (Linko) ..... 187
- Structural relaxation of dough**
- Effect of bleaching on flour, measured by (Jaska) ..... 369
- Structure**
- Of corn endosperm cells (Duvick) ..... 374
- Of wheat gluten; lipoprotein model (Grosskreutz) ..... 336
- Of wheat kernel; histochemical study; dye-adsorption technique (Pomeranz and Shellenberger) ..... 103
- Structures**
- Dough and bread; formation of in crumb of starch bread (Jongh) ..... 140
- For maltol and isomaltol (Hodge and Nelson) ..... 207
- Sulphydryl groups**
- In dough; accessibility of, and factors controlling it (Bushuk) ..... 438
- In flour; measurement by titration with mercuric chloride (Sullivan, Dahle, and Larson) ..... 272
- In wheat kernels; localization by histochemical procedure (Pomeranz and Shellenberger) ..... 133
- Sulphydryl-blocking agents**; effect on oxidation of wheat flour (Sullivan, Dahle, and Nelson) ..... 281
- Surface-active agents, see Surfact-**

- ants**
- Surfactants**; complexes with amylose (Osman, Leith, and Fleš) 449
- Techniques** (see also **Extensigraph studies**; **Farinograph studies**; **Methods**)
- Chromatography 256, 407, 463, 507
- Colorimetry 47, 241, 467, 501
- Dye-staining 103, 109, 113, 374
- Electrophoresis 187, 256, 325, 399
- Freezing microtome 374
- Sedimentation 67
- Spectrophotometry (see also **Colorimetry**) 463
- Temperature**
- Effect on farinograms of semolina (Irvine, Bradley, and Martin) 153
- Effect on hydration characteristics of rice at time of irradiation and vacuum treatment (Hogan and Roseman) 432
- vs. Water diffusion in wheat kernel (Fan, Chung, and Shellenberger) 540
- Thermostability** of alpha-amylases (Fleming, Miller, and Johnson) 479
- Thiamine**, in wheat; effect of parboiling on (Sabry and Tannous) 536
- Thioglycolic acid**; effect on bromate reaction in dough (Bushuk and Hlynka) 309
- Torsional (bending) strength** of macaroni (Karcsonyi and Borsos) 14
- Varietal studies**
- With rice; for cooking quality when presoaked (Desikachar and Subrahmanyam) 356
- With wheat
- difference in behavior with Ottawa micro mill (Kemp, Whiteside, MacDonald, and Miller) 50
- for kernel hardness vs. moisture content (Katz, Collins, and Cardwell) 364
- With durum wheats; farinograph study (Irvine, Bradley, and Martin) 153
- With wheat gluten; for electrophoretic composition and intrinsic viscosity (Cluskey, Taylor, Charley, and Senti) 325
- With wheat kernel; water diffusion coefficients in (Fan, Chung, and Shellenberger) 540
- Viscosity** of gluteins from different wheat varieties (Cluskey, Taylor, Charley, and Senti) 325
- Vitamins**; B-complex, in wheat; effect of parboiling on (Sabry and Tannous) 536
- Water**; diffusion coefficients of, in wheat kernels (Fan, Chung, and Shellenberger) 540
- Water absorption** by rice
- Amount, and effect of heat on, after gas-plasma irradiation (Hogan and Roseman) 432
- (Roseman, Hogan, Stone, and Webb) 423
- Study of penetration during soaking (Desikachar and Subrahmanyam) 356
- Wheat**
- Alpha-amylase activity in, modified Wohlgemuth method for determining (Hagberg) 241
- Dark-grained; nitrogen content, determined by colorimetry (Jennings) 467
- Fat acidity in, colorimetric method (Baker) 47
- Germinating; free fatty acids in, mapped with dyes (Pomeranz and Shellenberger) 122
- Glutens from, see **Glutens**
- Kernel of, see **Wheat kernel**
- Malted, procedure for determining cereal, fungal, and bacterial alpha-amylase in (Fleming, Miller, and Johnson) 479
- Malting of; control of fungi during (Fleming, Johnson, and Miller) 170
- Nitrogen in; determination by colorimetry (Jennings) 467
- Proteins in
- buffer-soluble; extraction, fractionation, and chromatography (Coates and Simmonds) 256
- estimated by biuret test, modified (Pinckney) 501
- Stored, see **Storage studies**
- Vitamin content of, B-complex; effect of parboiling on (Sabry and Tannous) 536
- Wheat and wheat products**; flour
- extraction rate estimated by dye-adsorption technique (Pomeranz and Shellenberger) 113
- Wheat kernel**
- Hardness, vs. moisture content of (Katz, Collins, and Cardwell) 364
- Histochemical study of germ



- and aleurone (Pomeranz and Shellenberger) ..... 103
- Protein distribution in, mapped with dyes (Pomeranz and Shellenberger) ..... 109
- Sulfhydryl groups in; localization by histochemical procedure (Pomeranz and Shellenberger) ..... 133
- Varieties, see **Varietal studies**
- Water in; diffusion coefficients of (Fan, Chung, and Shellenberger) ..... 540
- Wheat**—quality; dough-expansion apparatus (small-scale) for estimating (Miller, Whiteside, and Kalbfleisch) ..... 204
- Whiteness of flour**, see **Color**, of flour
- Wohlgemuth method** (modified), for alpha-amylase activity in wheat and rye (Hagberg) .... 241
- X-ray scattering**
- In amylose-surfactant complexes (Osman, Leith, and Fles) ..... 449
- From glutens; evidence of lipid structure (Grosskreutz) .... 336
- Xylidine Ponceau dye**; for histochemical study with wheat kernel, to map protein distribution (Pomeranz and Shellenberger) ..... 109
- Zein**
- Development in corn kernel (Bressani and Conde) ..... 76
- In protein granules, intracellular deposition (Duvick) ..... 374
- Purified; preparation by adsorption-desorption procedure (Craine, Freimuth, Boundy, and Dimler) ..... 399

# CEREAL CHEMISTRY

Published by the American Association of Cereal Chemists

*Editor-in-Chief* ..... K. A. GILLES

*Managing Editor* ..... RAYMOND TARLETON

*Assistant Editor* ..... EUNICE R. BROWN

## *Editorial Board:*

WELKER G. BECHTEL

ROBERT R. LARSEN

KARL F. FINNEY

DALE K. MECHAM

G. N. IRVINE

C. E. RIST

WILLIAM R. JOHNSTON

THOMAS J. SCHOCH



VOLUME 38, Nos. 1-6

JANUARY-NOVEMBER, 1961



Minneapolis, Minnesota

1961

Jones Press, Inc., Minneapolis, Minn.

# CONTENTS

NUMBER 1, JANUARY, 1961

	PAGE
William Findlay Geddes. <i>R. J. Tarleton</i> .....	iii
The Relationship between Farinograph Mobility and Absorption. <i>J. B. Louw and G. N. Krynauw</i> .....	1
Measurement of Flour Whiteness. <i>A. W. Croes</i> .....	8
An Apparatus for Measuring the Torsional Strength of Macaroni. <i>L. P. Karacsonyi and A. G. Borsos</i> .....	14
Steeping Studies with Corn Endosperm Sections. <i>S. A. Watson and E. H. Sanders</i> .....	22
Structure of the Starch Granule. II. Action of Various Amylases on Granular Starches. <i>Harry W. Leach and Thomas J. Schoch</i> .....	34
A Colorimetric Method for Determining Fat Acidity in Grain. <i>Doris Baker</i> .....	47
Ottawa Micro Flour Mill. <i>J. G. Kemp, A. G. O. Whiteside, D. C. MacDonald, and H. Miller</i> .....	50
2 (3)-Benzoxazalone in Malting of Barley. <i>Matti Linko, Pekka Linko, and Tor-Magnus Enari</i> .....	60
Measurements of the Particle Size Distribution of Flour. <i>R. R. Irani and W. S. Fong</i> .....	67
Changes in the Chemical Composition and in the Distribution of Nitrogen of Maize at Different Stages of Development. <i>Ricardo Bressani and Rodolfo Conde</i> .....	76
Wet-Milling High-Amylose Corn Containing 66- to 68-Percent- Amylose Starch. <i>R. A. Anderson, C. Vojnovich, and E. L. Grif- fin, Jr.</i> .....	84
A Note on the Effect of Steeping Time on Wet-Milling High- Amylose Corn Containing 57-Percent-Amylose Starch. <i>R. A. Anderson, C. Vojnovich, and E. L. Griffin, Jr.</i> .....	94
Laboratory Milling. I. A Small-Scale Bran Finisher. <i>H. C. Black, M. H. Fisher, and G. N. Irvine</i> .....	97
Editorial Policy and Suggestions to Authors .....	102

NUMBER 2, MARCH, 1961

Histochemical Characterization of Wheat and Wheat Products. I. Histochemical Demonstration of Germ and Aleurone Using Acridine Orange. <i>Y. Pomeranz and J. A. Shellenberger</i> .....	103
Histochemical Characterization of Wheat and Wheat Products. II. Mapping of Protein Distribution in the Wheat Kernel. <i>Y. Pomeranz and J. A. Shellenberger</i> .....	109
Histochemical Characterization of Wheat and Wheat Products. III. Use of Methyl Green in Estimating Flour Extraction Rate. <i>Y. Pomeranz and J. A. Shellenberger</i> .....	113
Histochemical Characterization of Wheat and Wheat Products.	

IV. Mapping the Free Fatty Acids in Germinating Wheat. <i>Y. Pomeranz and J. A. Shellenberger</i> .....	122
Histochemical Characterization of Wheat and Wheat Products. V. Sulfhydryl Groups: Their Localization in the Wheat Kernel. <i>Y. Pomeranz and J. A. Shellenberger</i> .....	133
The Formation of Dough and Bread Structures. I. The Ability of Starch to Form Structures, and the Improving Effect of Glyc- eryl Monostearate. <i>G. Jongh</i> .....	140
A Farinograph Technique for Macaroni Doughs. <i>G. N. Irvine, J. W. Bradley, and G. C. Martin</i> .....	153
Some Volatile Carbonyl Compounds Arising during Panary Fer- mentation. <i>F. E. Kohn, L. Wiseblatt, and L. S. Fosdick</i> .....	165
The Control of Fungi during the Malting of Wheat. <i>James R. Fleming, John A. Johnson, and Byron S. Miller</i> .....	170
The Bromate Reaction in Dough. III. Effect of Continuous Mix- ing and Flour Particle Size. <i>W. Bushuk and I. Hlynka</i> .....	178
Zone Electrophoresis Pattern of Free Amino Acids as an Index of Storage Condition of Wheat. <i>Pekka Linko</i> .....	187
A Note on Self-Diffusion in Dough Containing Br <sup>82</sup> -Labeled Bro- mate. <i>C. C. Lee and R. Tkachuk</i> .....	194
A Note on a Rapid Method for the Determination of Lipids in Brewing Adjunct Cereals. <i>Gerhard J. Haas and Alan I. Fleischman</i> .....	198
Note on a Simplified Rapid Method for Determining Alpha- Amylase Activity. <i>Sven Hagberg</i> .....	202
A Note on the Construction of a Small-Scale Dough Expansion Apparatus for the Estimation of Wheat Quality. <i>H. Miller, A. G. O. Whiteside, and W. Kalbfleisch</i> .....	204
Editorial Policy and Suggestions to Authors .....	206

## NUMBER 3, MAY, 1961

Preparation and Properties of Galactosylisomaltol and Isomaltol. <i>J. E. Hodge and E. C. Nelson</i> .....	207
Flavor of Bread and Pastry upon Addition of Maltol, Isomaltol, and Galactosylisomaltol. <i>J. E. Hodge and Helen A. Moser</i> .....	221
The Carbohydrates of the Gramineae. XI. The Constitution of the Water-Soluble Polysaccharides Derived from Bread Crumb. <i>Kenneth A. Gilles, W. F. Geddes, and Fred Smith</i> .....	229
Modified Wohlgemuth Methods for Alpha-Amylase Activity of Wheat and Rye. <i>Sven Hagberg</i> .....	241
Characterization of Intermediary Fractions of High-Amylose Corn Starches. <i>Roy L. Whistler and William M. Doane</i> .....	251
Proteins of Wheat and Flour. Extraction, Fractionation, and Chromatography of the Buffer-Soluble Proteins of Flour. <i>J. H. Coates and D. H. Simmonds</i> .....	256
The Oxidation of Wheat Flour. I. Measurement of Sulfhydryl Groups. <i>Betty Sullivan, Leland Dahle, and Elof Larson</i> .....	272
The Oxidation of Wheat Flour. II. Effect of Sulfhydryl-Blocking	



Agents. <i>Betty Sullivan, Leland Dahle, and O. Rudolph Nelson</i>	281
Note on a Method of Determining the Degree of Milling of Whole Milled Rice. <i>Joseph T. Hogan and Harold J. Deobald</i>	291
Bubble Mechanics in Thick Foams and Their Effects on Cake Quality. <i>Avrom R. Handleman, James F. Conn, and John W. Lyons</i>	294
Communication to the Editor. Obtaining Damaged Starch Mathematically Rather Than Graphically by the Sandstedt and Matern Procedure. <i>J. G. Ponte, Jr., and Jocelyn Rosen</i>	306
Editorial Policy and Suggestions to Authors	307

## NUMBER 4, JULY, 1961

The Bromate Reaction in Dough. IV. Effect of Reducing Agents. <i>W. Bushuk and I. Hlynka</i>	309
The Bromate Reaction in Dough. V. Effect of Flour Components and Some Related Compounds. <i>W. Bushuk and I. Hlynka</i>	316
Electrophoretic Composition and Intrinsic Viscosity of Glutens from Different Varieties of Wheat. <i>J. E. Cluskey, N. W. Taylor, Helen Charley, and F. R. Senti</i>	325
A Lipoprotein Model of Wheat Gluten Structure. <i>J. C. Grosskreutz</i>	336
Microtests for Flour Quality. <i>H. R. Elling and M. A. Barmore</i>	349
The Formation of Cracks in Rice during Wetting and Its Effect on the Cooking Characteristics of the Cereal. <i>H. S. R. Desikachar and V. Subrahmanyam</i>	356
Hardness and Moisture Content of Wheat Kernels. <i>R. Katz, N. D. Collins, and A. B. Cardwell</i>	364
Effect of Bleaching on Flour as Measured by Structural Relaxation of Dough. <i>Endel J. Jaska</i>	369
Protein Granules of Maize Endosperm Cells. <i>Donald N. Duwick</i>	374
Conversion of Constant-Flour Farinograph Absorption to Constant-Dough Basis. <i>I. Hlynka, F. D. Kuzina, and W. C. Shuey</i>	386
Note on Variations in Residual Bran in Individual Rice Grains from Batches Polished to Different Degrees. <i>A. N. Srirangarajan, H. S. R. Desikachar, K. Indiramma, and A. N. Sankaran</i>	391

## NUMBER 5, SEPTEMBER, 1961

Some Improving Effects of Halogenates and Their Reduction Intermediates in Dough. <i>R. Tkachuk and I. Hlynka</i>	393
Preparation of Purified Zein by Adsorption-Desorption. <i>E. M. Craine, Diane V. Freimuth, Joyce A. Boundy, and R. J. Dimler</i>	399
Organic Acids of Barley Grains. <i>J. S. Wall, L. C. Swango, D. Tesari, and R. J. Dimler</i>	407
Gas Plasma Irradiation of Rice. I. Hydration Characteristics. <i>A. S. Roseman, J. T. Hogan, R. B. Stone, and J. C. Webb</i>	423

Gas Plasma Irradiation of Rice. II. Effect of Heat on Hydration and Cooking Characteristics. <i>J. T. Hogan and A. S. Roseman</i>	432
Accessible Sulfhydryl Groups in Dough. <i>W. Bushuk</i>	438
Complexes of Amylose with Surfactants. <i>Elizabeth M. Osman, Sandra J. Leith, and Melita Fles</i>	449
The Oxidation of Wheat Flour. III. The Isolation of Thioctic Acid. <i>Betty Sullivan, Leland K. Dahle, and David A. Peterson</i>	463
Editorial Policy and Suggestions to Authors	466

## NUMBER 6, NOVEMBER, 1961

Determination of the Nitrogen Content of Cereal Grain by Colorimetric Methods. <i>A. C. Jennings</i>	467
A Method for the Determination of Relative Amounts of Malted-Wheat, Fungal ( <i>Aspergillus oryzae</i> ), and Bacterial ( <i>Bacillus subtilis</i> ) Alpha-Amylase in Mixtures, and Its Application to Malted Wheat. <i>James R. Fleming, Byron S. Miller, and John A. Johnson</i>	479
Chloride Content of Cake Flours and Flour Fractions. <i>William F. Sollars</i>	487
The Biuret Test as Applied to the Estimation of Wheat Protein. <i>Alvin J. Pinckney</i>	501
Identification of Carbonyl Compounds Produced in Pre-ferments. <i>Byron S. Miller, John A. Johnson, and Robert J. Robinson</i>	507
Chloroethanol as a Cereal Protein Dispersant. <i>N. W. Tschoegl</i>	516
Effect of Some Volatile Chemicals on the Microbial Spoilage of Moist Kafir Corn ( <i>Andropogon sorghum</i> ) under Airtight Storage. <i>K. S. Srinavasan and S. K. Majumder</i>	529
Effect of Parboiling on the Thiamine, Riboflavin, and Niacin Contents of Wheat. <i>Z. I. Sabry and R. I. Tannous</i>	536
Diffusion Coefficients of Water in Wheat Kernels. <i>Liang-tseng Fan, Do Sup Chung, and John A. Shellenberger</i>	540
Editorial Policy	548
Author and Subject Index to Volume XXXVIII	549

